

NEW NEVADA ENTITIES AND COMBINATIONS IN *ERIOGONUM* (POLYGONACEAE)

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ABSTRACT.— New species and varieties of the plant genus *Eriogonum* (Polygonaceae) that occur in Nevada are proposed. *Eriogonum tiehmii* and *E. ochrocephalum* var. *alexandrae* are endemic to Nevada, and *E. leucisii* is restricted to extreme northeastern Nevada and adjacent Utah. These entities belong to the subgenus *Eucycla*. Two varieties of *E. umbellatum* (of the subgenus *Oligogonum*) are proposed. The first, var. *juniporinum*, is found in eastern Nevada and in the desert ranges of southeastern California. The second is var. *furcosum*, which is restricted to the Sierra Nevada. One new combination is also proposed: *E. nudum* var. *gramineum*.

The following new entities are validated for a treatment of *Eriogonum* in a companion article (Reveal 1985).

Eriogonum ochrocephalum S. Wats. var.
alexandrae Reveal, var. nov.

A var. *ochrocephalo* caulibus pubescentibus differ.

Low, rounded to spreading caespitose perennial herbs forming open to compact mats 1–8 dm across and up to 2 dm high, with a much branched, woody caudex arising from a stout, gnarled, woody taproot; *leaves* erect to spreading, numerous, the leaf-blades lanceolate to narrowly ovate, 1–2 cm long, 0.5–1.5 cm wide, white-tomentose on both surfaces, the petiole 2–5 cm long, tomentose; *stems* erect, 3–10 cm long, tomentose; *involucres* turbinate, (3.5) 4–5 mm long, 2–2.5 mm wide, rigid and tubular, tomentose without, the 5–6 lobes 0.3–0.5 mm long and erect; *flowers* yellow with yellowish green midribs, 2–3 mm long, the tepals oblong, united about 1/3 to 1/2 their length; *stamens* exserted, the filaments 3–4 mm long, pilose basally, the anthers yellow, 0.4–0.5 mm long, oblong; *achenes* light brown, 3–3.5 mm long, the narrow base tapering to a long, 3-angled beak.

TYPE.— NEVADA, Lyon Co.: Along Nevada Highway 3 in Wilson Canyon between Smith and Mason, 12.8 mi NE of Smith and 2.5 mi SE of the junction of Nevada Highway 3 and Norydike Cutoff, on volcanic tuff hills

S of the West Fork of the Walker River, associated with *Atriplex*, at about 1460 m (4800 ft) elevation, 21 Jun 1978, *Reveal et al.* 4737. Holotype, US! Isotypes BRY! CAS! DUKE! F! GH! MARY! MEXU! MO! NY! OKL! RENO! RSA! TEX! UC! UTC! and elsewhere.

ADDITIONAL SPECIMENS EXAMINED.— NEVADA. Lyon Co.: SW slope of Wassuk Range, 13 Jun 1947, *Alexander & Kellogg* 5314 (OKL, UC); 0.5 mi NW on Nevada Highway 22 from rd E along the East Walker River, 6 Jun 1981, *Tiehm* 6527 (MARY); Aldrich Grade along Nevada Highway 3C N of Fletcher Springs, 6 Jun 1981, *Tiehm* 6558 (MARY). Pershing Co.: 2.8 air mi N of Trinity Peak, Trinity Range, 28 Jun 1980, *Tiehm* 6133 (MARY); W of Cooper Valley, SE end of Sahwave Mts., 29 May 1983, *Tiehm & Tucker* 7758 (MARY). Washoe Co.: NE side of Hungry Valley near Hungry Spring, 31 May 1980, *Tiehm et al.* 5769 (MARY); W of site of Leadville, Granite Range, 30 Jun 1983, *Tiehm* 8017 (MARY); 1.5 air mi NE of Grass Valley Range, NW end of Granite Range, 6 Jul 1983, *Tiehm* 8075 (MARY).

The var. *alexandrae* is named for Annie M. Alexander (1867–1950) who discovered this plant during her last botanical expedition to Nevada with Louise Kellogg in 1947. Miss Alexander was then 80 years old. It is a pleasure to remember this fine Nevada collector by naming this variant in her honor.

The var. *alexandrae* is generally found on the eastern edge of the distribution of var.

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ochrocephalum. The latter may have glabrous or glandular stems, but those of var. *alexanderae* are always tomentose. To date, the two variants have not been found growing sympatrically.

Eriogonum lewisii Reveal, sp. nov.

A *E. desertorum* (Maguire) R. J. Davis foliis brevioribus et angustioribus cum caulibus floccosis nec tomentosis, involucri floccosis apice.

Low, rounded perennial herbs forming a compact to slightly spreading mat 1–4 dm across and up to 1 dm high, with a much branched, woody caudex arising from a stout, gnarled, woody taproot; *leaves* erect to spreading, numerous, the leaf-blades elliptic to ovate, 1–1.5 cm long, 4–6 (7) mm wide, grayish tomentose on both surfaces, becoming less so and greenish beneath the tomentum with age on the upper surface, the petiole 0.8–1.8 (2) cm long, tomentose; *stems* erect, 4–8 (10) cm long, floccose; *involucres* turbinate-campanulate, 2.5–3 mm long, 2–2.5 mm wide, rigid, floccose without with the hairs restricted (by late anthesis) to the 5 spreading, 1–1.5 mm long, lobes; *flowers* yellow with reddish yellow midribs, (2) 2.5–3 mm long, the tepals oblong, united about ¼ of their length; *stamens* exserted, the filaments 3–4 mm long, pilose basally, the anthers yellow, 0.4–0.5 mm long, oblong; *achenes* light brown, 3–3.5 mm long, the narrow base tapering to a long, 3-angled, minutely bristled beak.

TYPE.—NEVADA, Elko Co.: White Elephant Butte, S of Elk Mtn, on a steep, open, gravelly slope, associated with *Cercocarpus* and *Senecio*, sec. 4, T46N, R61E, at 2530 m (8300 ft) elevation, 30 Jul 1976, *Reveal & Reveal 4596*. Holotype, US! Isotypes, BRY! CAS! F! GH! MARY! MEXU! MICH! MO! NY! OKL! RENO! RSA! TEX! UC! UTC!

ADDITIONAL COLLECTIONS EXAMINED.—NEVADA, Elko Co.: Independence Mts., 12 Aug 1980, *Tiehm & Birdsey 5193* (RENO). UTAH, Box Elder Co.: Copper Mtn, 13 Jun 1928, *Cottam 3089* (BRY, F).

This new species of *Eriogonum* is named in honor of Mont E. Lewis, long a major collector of intermountain plants for the United

States Forest Service and an authority on the genus *Carex*. It was on the basis of a collection he made that I searched the White Elephant Butte area for this unusual buckwheat. It, like *E. ochrocephalum* var. *alexanderae* proposed above, belongs to the subgenus *Eucycla* (Nutt.) Kuntze.

In Nevada, Lewis's buckwheat may be distinguished by its floccose stems and involucries, small leaves, and high elevation habitat. It differs from the lower elevation and more southern *Eriogonum desertorum* by these features and others, notably the well-defined yet somewhat papery involucrial tube that retains its rigid characteristics. In Utah and Idaho the capitulate forms of *Eriogonum brevicaulis* var. *laxifolium* (Torr. & Gray) Reveal most closely resemble *E. lewisii*. The variety tends to be restricted to the Wasatch Ranges of Idaho and Utah, ranging eastward to southwestern Wyoming. Like *E. desertorum*, the var. *laxifolium* has a well-defined and densely tomentose involucre. In addition, the leaves of this more eastern expression are decidedly longer and narrower than those of *E. lewisii*.

Eriogonum tiehmii Reveal, sp. nov.

A *E. anemophilum* Greene involucri longioribus et floribus sparse glandulosis differt.

Low, spreading perennial herbs forming a dense compact mat up to 3 dm across and to 1.6 dm high, with a much branched woody caudex arising from a stout, gnarled taproot; *leaves* erect to spreading, numerous, persistent, with a bluish gray hue, the leaf-blades elliptic to oblong, (0.8) 1–2 (2.5) cm long, 5–8 (10) mm wide, entire, grayish to whitish tomentose on both surfaces, often slightly greenish under the tomentum with age on the upper surface, the petiole 0.5–1.6 (2) cm long, tomentose without, glabrous within, with an expanded petiole base 3–5 mm long and 1–2 mm wide; *stems* erect, (0.6) 1–1.3 (1.5) dm long, floccose, greenish or reddish under the hairs; *involucres* turbinate-campanulate, 4–5 mm long, 3–4 mm wide, rigid, floccose and reddish without, glabrous within except for a few hairs at the very tip in some, with 5–6 erect to slightly spreading, 1.5–2 mm long, narrowly triangular lobes, the

bractlets linear, 2–4 mm long, minutely glandular and toothed, the pedicels exerted, 4–7 mm long, glandular throughout and especially so near the apex; *flowers* yellowish white or whitish to cream with reddish midribs and apices or merely reddish to reddish green midribs, often with a greenish yellow base, 2.5–3.5 mm long at anthesis, up to 4 mm long in early fruit, the tepals oblong, the outer slightly broader than inner, both with out-rolled margins, the apices truncate with a slightly emarginate apex in the outer series of tepals, stipitate glandular along the midrib and base without, sparsely glandular within, united 1/5 to 1/4 of the length; *stamens* exerted, the filaments 3–4 (4.5) mm long, pilose basally, the anthers pale yellow, 0.4–0.5 mm long, oval to oblong; *achenes* light brown, 3–4 mm long, the subglobose base tapering to a long, 3-angled beak about 1/3 the length of the fruit, the stigma 1–1.2 mm long.

TYPE.—NEVADA, Esmeralda Co.: Silver Peak Range just N of the road from Silverpeak to Fish Lake Valley, 1.2 air mi NNW of Cave Springs, sec. 27, T1S, R37E, 1830 m (6000 ft) elevation, 31 May 1984, *Tielm, Reveal, Williams and Reveal 8534*. Holotype, US! Isotypes, BRY! CAS! MARY! NY! RENO! RSA! UTC! and elsewhere.

ADDITIONAL SPECIMENS EXAMINED.—NEVADA: Esmeralda Co.: Silver Peak Range, 1.2 air mi NNW of Cave Springs, 18 May 1983, *Tielm 7707* (BRY, CAS, MARY, NY, RSA, UTC).

This remarkable species, named for Arnold ("Jerry") Tielm, may be immediately recognized by its large, distinctly lobed involucre, cream-colored flowers, and stipitate-glandular tepals. In this latter feature, *Eriogonum tielmii* is unique. Minute glands are common on the inner surface of tepals in many species of cespitose buckwheats belonging to the subgenus *Eucyca*. Tielm's buckwheat is the only species with well-defined stipitate glands on the outer surface. In Nevada, *E. tielmii* is morphologically most similar to *E. anemophilum* Greene and the cream-colored phase of *E. beatleyae* Reveal. The scapes of the latter are glandular, not floccose as in *E. tielmii*, and the involucre of both established species does not approach the size of *E. tielmii*.

Eriogonum nudum Benth. var. *gramineum*
(S. Stokes) Reveal, comb. nov.

Based on *E. gramineum* S. Stokes, Gen. Eriog. 60, 1936. Type, California, Inyo Co.: Argus Mts., 1897, *Purpus 5676*. Holotype, UC! Isotypes, GH! K! MIN! P! US!

The concept of *Eriogonum nudum* var. *pubiflorum* Benth. in DC. has become increasingly restricted in its definition so that now the plant is defined as a northern element ranging from the central Sierra Nevada of California northward to south central Oregon. In Nevada, var. *pubiflorum* is found only in the extreme northwestern portion of the state, and then it is infrequent. In southern California, the long recognized var. *pauciflorum* S. Wats. of the Transverse ranges (and southward to northern Baja California Norte) has not been confused with var. *pubiflorum*, but in the southern portion of the Sierra Nevada the distinction is not always readily apparent. Howell (1976) proposed var. *westonii* (S. Stokes) J. T. Howell for the plants of the Tehachapi region and the western slope of the Sierra Nevada. The definition of that variety, as noted by Howell, cannot be expanded to include the plants of the desert range and eastern slope of Sierra Nevada common to Inyo and Mono counties, California. Thus, the var. *gramineum* is proposed. At present, var. *gramineum*, characterized by its yellow pubescent flowers and inflated stems, is not known from Nevada. It is to be sought in the Death Valley region of the state.

Eriogonum umbellatum Torr. var.
furcosum Reveal, var. nov.

A var. *elliptico* foliis subglabris vel glabris supra.

Low, rounded subshrubs up to 4.5 dm high and 8 dm across, infrequently forming a spreading mat to 5 dm across at higher elevations; *leaves* in loose rosettes, the leaf-blade elliptic to oblong, (0.7) 1–2.5 (3.5) cm long, 3–8 (13) mm wide, densely white tomentose below, thinly floccose or more commonly glabrous and bright green above, the petiole 3–10 (12) mm long; *flowering stems* erect, slender, 0.5–2 dm long, thinly floccose; *inflorescences* compoundly umbellate, 0.5–1.5

dm long, the branches floccose; *involucres* with tubes 2-3 (4.5) mm long, the usually reflexed lobes shorter to as long as the tube, floccose without; *flowers* bright yellow, (5) 6-8 mm long including the stipe.

TYPE.— CALIFORNIA, El Dorado Co.: Along California Highway 89, 2.2 mi S of U.S. Highway 50, on sandy granitic soil, associated with *Arctostaphylos*, *Artemisia*, and juniper-pinyon, 23 Aug 1975, *Reveal 3971*. Holotype, US! Isotypes, ARIZ! BRY! CAS! DUKE! F! GH! K! MARY! MEXU! MICH! MO! NY! OKL! RENO! RM! RSA! TEX! UC! UTC! and elsewhere.

REPRESENTATIVE SPECIMENS.— CALIFORNIA. Alpine Co.: Silver Lake, 2 Sep 1933, *Mason 7255* (IA, UC). Amador Co.: Bear River, 30 Jul 1896, *Hansen 1966* (B, MIN). Calaveras Co.: Dorrington, 7 Aug 1923, *Jepson 10058* (JEPS). El Dorado Co.: 5.5 mi S of Meyers, 9 Aug 1941, *Wheeler 402* (JEPS). Fresno Co.: Mono Creek Dam, 16 Jul 1935, *Everett & Johnson 7313* (DS, IDS, LA, MO, OKL, RSA, TAES, UC, UT). Kern Co.: ridge SE of Pine Flat, 28 Jul 1965, *Twisselmann 11330* (CAS, UTC). Madera Co.: The Niche, East Fork of Granite Cr., 17 Aug 1958, *J.T. Howell 34552* (CAS). Mariposa Co.: above Nevada Falls, Yosemite N.P., 10 Jul 1889, *Chestnut & Drew s.n.* (KANU, UC). Nevada Co.: Puddingstone Ridge, 5 mi E of North Columbia, 24 Jul 1971, *True 6903* (CAS). Placer Co.: Cisco, 14 Sep 1938, *Rose 38257* (RM). Sierra Co.: Sierra Valley, Sep 1872, *Lemmon s.n.* (ISC). Tulare Co.: Burnt Ridge, 18 Sep 1962, *Twisselmann 7780* (CAS). Tuolumne Co.: 0.8 mi E of Dardanelle, 28 Jul 1972, *Reveal & Reveal 2813* (BRY, CAS, DUKE, F, MICH, MO, NY, OKL, RSA, TEX, UTC). NEVADA. Washoe Co.: nr Verdi, 19 Jun 1903, *Stokes s.n.* (RSA).

The var. *furcosum* has been included under the name of the Pacific Northwest expression, var. *stellatum* (Benth. in DC.) M. E. Jones, or, as this must now be called due to a recent change in the *International Code of Botanical Nomenclature*, var. *ellipticum* (Nutt.) Reveal (Reveal 1983), in recent treatments of the genus in California (Reveal & Munz 1968). This expression is primarily found in the Sierra Nevada, and then mainly along the more gentle western slope. As the elevation of this range decreases to the north,

the variety crosses the crest of the Sierra Nevada and enters into the Lake Tahoe Basin of California and onto the eastern foothills in extreme western Nevada.

In southern California, the var. *furcosum* gives way to var. *munzii* Reveal in the Transverse Ranges and to var. *subaridum* S. Stokes on the arid eastern slopes of the Sierra Nevada. The var. *chlorothamnus* Reveal in Munz is found along the eastern foothills of the Sierra Nevada bordering the Inter-mountain Region; this variant is isolated from var. *furcosum* by the Sierran crest. To the north, the new variety is replaced by another compoundly umbellate expression of *Eriogonum umbellatum*. This northern expression, which extends into the Siskiyou-Trinity region of California and adjacent southern Oregon, is as yet unnamed. Along the Coast Ranges of California is the distinctive var. *bahiiforme* (Torr. & Gray) Jeps. This expression is not found in the Sierra Nevada.

Eriogonum umbellatum Torr. var.
juniporinum Reveal, var. nov.

A var. *subaridum* S. Stokes floribus cremeis differ.

Plants forming low shrubs or subshrubs up to 8 dm high and 10 dm across; *leaves* in loose rosettes, the leaf-blade elliptic, (0.7) 1-2 cm long, (3) 5-10 (12) mm wide, greenish or whitish floccose to glabrous on both surfaces, becoming greenish floccose above with maturity; *flowering stems* slender, erect, 1-2.5 dm long, green and floccose to nearly glabrous; *inflorescences* compound umbellate, 0.5-1.5 (2) dm long, floccose; *peduncles* slender, 0.5-5 (6) cm long, floccose; *involucres* with tubes (2.5) 3-3.5 mm long, the reflexed lobes 1-2.5 mm long, thinly floccose; *flowers* cream colored or whitish, (4) 5-6 mm long.

TYPE.— NEVADA, White Pine Co.: Along U.S. Highway 50-6 at Sacramento Pass, on the northern end of the Snake Range, about 11 mi northwest of Baker, on sandy soil associated with juniper-pinyon and *Artemisia*, at about 2180 m (7150 ft) elevation, 13 Aug 1975, *Reveal & Reveal 3925*. Holotype, US! Isotypes, BRY, CAS, MARY, NY, OKL, TEX.

REPRESENTATIVE SPECIMENS.— CALIFORNIA. San Bernardino Co.: Upper Cottonwood Canyon, Mid Hills, 30 Aug 1973, *Henrickson 12727* (RSA); 2 mi from Kingstone

Peak, S slope of Kingstone Mts., 23 Oct 1977, *Henrickson & Prigge 16298* (RSA); above Keystone Spring, New York Mts., 13 Oct 1935, *Munz 13854* (CI, DS, POM, UC, UTC); Mitchells Caverns State Park, Providence Mts., 20 Jun 1973, *Thorne & Tilforth 44033* (RSA, in bud); NW of Pachalka Springs, Clark Mts., 6 Oct 1935, *Wolf 7605* (LA, OKL, RSA). NEVADA. Lincoln Co.: Horse Spring Basin, Mormon Range, 28 Jun 1954, *Cullion 566* (OKL, UC); Silver Canyon, Mt. Irish, 19 Jun 1938, *Jaeger s.n.* (POM, not in flower). White Pine Co.: Pole Canyon, Snake Range, 15 Aug 1964, *Hohngren & Reveal 1664* (BRY, CAS, DS, MO, NY, RENO, RM, RSA, UC, UTC); Ward Mtn., S of Ely, 4 Aug 1969, *McClintock s.n.* (CAS); 1.3 mi E of Robinson Summit, 15 mi NW of Ely, 13 Aug 1975, *Reveal & Reveal 3927* (MICH).

The var. *juniporinum* is closely related to var. *subaridum* S. Stokes in terms of its habit and habitat but more like var. *dichrocephalum* Gand. and var. *versicolor* S. Stokes as to flower color. The latter two variants are spreading, matted perennials and not at all shrubby, and in general the leaves are tomentose, at least on the lower surface in these expressions. The disjunct distribution of var. *juniporinum* is intriguing not only because the variant occurs in both the Great Basin cold desert habitat in southeastern Nevada and in the warm desert habitat of the Mojave Desert in southeastern California, but also

because there is a delay in flowering between the two areas. In Nevada the variety comes into flower in late June and continues to flower into early September. In California, plants begin to flower in July and continue to flower well into late October. It is likely this difference in flowering time is due to the seasonality of rainfall. The var. *juniporinum* is generally a plant of the desert foothills and low passes in Nevada, reaching its upward limits about 2250 m elevation. The var. *dichrocephalum* and var. *versicolor* are found in the mountain ranges across southern Nevada between the two disjunct populations of var. *juniporinum*. These variants generally occur at higher elevations, or at least at points higher on mountain slopes than var. *juniporinum*. In California the new variety is found on the higher slopes, but it may be found as low as 1350 m elevation in the Providence Mountains and on the Kingstone Range.

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